UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,233	03/10/2004	John S. Crnko	96600/18UTL	3559

7590 05/01/2006

ROBERT W. STROZIER
P.O. BOX 429
BELLAIRE, TX 77402-0429

EXAMINER	
HOPKINS, ROBERT A	

ART UNIT	PAPER NUMBER
1724	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/798,233	CRNKO ET AL.	
	Examiner	Art Unit	
	Robert A. Hopkins	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

Paragraph [0092] recites "here are many different physical configurations". Examiner believes "here" should be amended to read – There--.

Paragraph [0120] recites "two". Examiner believes "two" should be changed to – to--.

Paragraph [0138] line 6 recites 'hoffer". Examiner believes "hoffer" should be changed to – hotter --.

Appropriate correction is requested.

Claim Rejections - 35 USC § 112

Claims 5,8,9, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5,8,9,11 recite "wherein the steps are performed in any order". Examiner notes that claim 1 also includes a method step, therefore examiner is unsure as to which steps are being referred to by claim 5. Are the steps just for claim 4, or the combination of claim 1 and 4. Examiner also notes that the step of irradiating the column with microwave energy must inherently precede the step of holding the chromatography column at a desired temperature, therefore the steps cannot be performed in any order as claimed.

Claims 14,15, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 12-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 12 and 16 recite "A GC separation protocol for a microwave heated GC apparatus". Examiner notes the definition of protocol is "is a set of guidelines for use in various circumstances". Examiner respectfully submits that statuatory subject matter falls into the catagories of a method, apparatus or structure, product, composition of matter, or improvement thereof. Examiner respectfulyl submits that a "protocol" fails to fall within the listed catagories of statuatory subject matter. Someone or ordinary skill in the art would not be able to properly determine the metes and bounds of the claimed "protocol". Examiner suggests rewording the claim to clearly fall within the "method" or apparatus or structure" catagories of statuatory subject matter. Claims 13-15 depend on claim 12 and hence are also rejected. Claim 17 depends on claim 16 and hence is also rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a method for improving separation efficiencies comprising the step of supplying, to a chromatography column(110), a gaseous coolant(cold air or boiled off liquid nitrogen; column 14 lines 47-59) at a sufficient flow rate and at a sufficient temperature to produce a negative temperature ramp(figure 17) in the column, wherein the column includes a continuous phase material(105) forming a wall surrounding an interior space for containing a chromatography sample, and a microwave absorbing material(column 13 lines 37-45) contained in the continuous phase material, where the chromatography column has a loss factor sufficient to absorb at least 50% of the microwave energy transmitted into the microwave heating apparatus and wherein the negative temperature ramp improves the separation of lower boiling components from higher boiling components or the improvement of the separation of components having boiling points within a narrow temperature range. Rounbehler et al further teaches irradiating the chromatography column with microwave

energy sufficient to produce a desired positive temperature ramp(figure 17). Rounbehler et al further teaches holding the chromatography column at a desired temperature and time by supplying sufficient coolant flow at a sufficient temperature and irradiating the column with sufficient microwave energy to hold the column at the desired temperature for the desired time(column 14 lines 20-24).

Claims 6-9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a method for improving separation efficiencies comprising the step of irradiating a chromatography column(110) including a continuous phase material forming a wall surrounding an interior space for containing a chromatography sample, and a microwave absorbing material(column 13 lines 37-45) contained in the continuous phase material, where the chromatography column has a loss factor sufficient to absorb at least 50% of the microwave energy transmitted into the microwave heating apparatus to produce a desired temperature ramp, and supplying to the chromatography column(110), a gaseous coolant(cold air or boiled off liquid nitrogen; column 14 lines 47-59) at a sufficient flow rate and at a sufficient temperature to produce a negative temperature ramp(figure 17) in the column, wherein the negative temperature ramp improves the separation of lower boiling components from higher boiling components or the improvement of the separation of components having boiling points within a narrow temperature range.

Rounbehler et al further teaches holding the chromatography column at a desired temperature and time by supplying sufficient coolant flow at a sufficient temperature and

irradiating the column with sufficient microwave energy to hold the column at the desired temperature for the desired time(column 14 lines 20-24).

Claims 10 and 11 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a method for improving separation efficiencies comprising the step of irradiating a chromatography column(110) including a continuous phase material forming a wall surrounding an interior space for containing a chromatography sample, and a microwave absorbing material(column 13 lines 37-45) contained in the continuous phase material, where the chromatography column has a loss factor sufficient to absorb at least 50% of the microwave energy transmitted into the microwave heating apparatus to produce a desired temperature ramp, and supplying to the chromatography column(110), a gaseous coolant(cold air or boiled off liquid nitrogen; column 14 lines 47-59) at a sufficient flow rate and at a sufficient temperature to produce a negative temperature ramp(figure 17) in the column, wherein the negative temperature ramp improves the separation of lower boiling components from higher boiling components or the improvement of the separation of components having boiling points within a narrow temperature range, and holding the chromatography column at a desired temperature and time by supplying sufficient coolant flow at a sufficient temperature and irradiating the column with sufficient microwave energy to hold the column at the desired temperature for the desired time(column 14 lines 20-24).

Claims 12-15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a GC separation protocol for a microwave heated GC apparatus comprising at least one positive temperature ramp and at least one negative temperature ramp(figure 17), where the positive temperature ramp is produced by irradiating a column which includes a continuous phase material forming a wall surrounding an interior space for containing a chromatography sample, and a microwave absorbing material(column 13 lines 37-45) contained in the continuous phase material, where the chromatography column has a loss factor sufficient to absorb at least 50% of the microwave energy transmitted into the microwave heating apparatus and wherein the negative temperature ramp is produced by supplying gaseous coolant to the column(cold air or boiled off liquid nitrogen; column 14 lines 47-59) at a flow rate and at a temperature sufficient to produce one or more desired negative temperature ramps. Rounbehler et al further teaches at least one hold, wherein the column is maintained at a desired temperature and for a desired time by supplying either coolant and/or a combination of coolant and microwave energy to the column.

Examiner notes that the above rejection is based on the prior art reference teaching all of the limitations of the body of the claim, wherein the examiner has determined that the prior art reference teaches a "protocol".

Claims 16 and 17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a GC separation protocol for a microwave heated GC apparatus comprising one or a plurality of positive temperature ramps, one or a plurality

of holds, and one or a plurality of negative temperature ramp(figure 17), where each positive temperature ramp is produced by irradiating a column which includes a continuous phase material forming a wall surrounding an interior space for containing a chromatography sample, and a microwave absorbing material(column 13 lines 37-45) contained in the continuous phase material, where the chromatography column has a loss factor sufficient to absorb at least 50% of the microwave energy transmitted into the microwave heating apparatus and wherein each negative temperature ramp is produced by supplying gaseous coolant to the column(cold air or boiled off liquid nitrogen; column 14 lines 47-59) at a flow rate and at a temperature sufficient to produce one or more desired negative temperature ramps.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Walters et al(5939614) teaches a chromatographic column using microwave energy for heating and a microwave absorbing material for absorbing microwave energy to assist in the heating process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Thursday, 7:30am-6pm, every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rah
April 28, 2006

ROBERT A. HOPKINS
PRIMARY EXAMINER
A.U. 1724